Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

ISM 482

ISM 182 & ISM 482

Integration Scaling Matrix Switchers with Audio

- Eight fully configurable video inputs
- Dual, individually scaled outputs
- 3:2 and 2:2 pulldown detection
- Dynamic Motion Interpolation (DMI™)
- ISM 182: 17 scaled output rates
- ISM 482: 32 scaled output rates including HDTV
- Ideal for use with digital displays
- Accu-RATE Frame Lock (AFL™)
- Triple Action Switching™
- Balanced and unbalanced audio
- Audio breakaway
- 16 Auto memories per input
- RS-232 control
- Ethernet Control

SERVICE SUPPORT SOLUTIONS

www.extron.com

Description

The **ISM Series** are Integration Scaling Matrix switchers with eight, fully configurable video inputs and two independent audio/video outputs. Both video outputs of the ISM Series switchers feature built-in, high performance video scalers. These switchers feature proprietary Extron technologies that produce superior-quality scaled video outputs. The ISM Series provides flexibility in selecting output resolution to two different displays. These matrix switchers are ideal solutions for integration into dual-display videoconferencing and presentation environments such as boardrooms, conference rooms, classrooms, courtrooms, churches, and auditoriums.

There are two matrix switchers/scalers in this series: the ISM 182 and the ISM 482. Both offer comparable features: eight video inputs configurable for RGBHV, RGBS, RGsB, component video, S-video, or composite video on female BNCs and two high resolution RGB outputs on female BNCs and/or female 15-pin HD connectors. Stereo audio (balanced/unbalanced) is input on eight, 3.5 mm captive screw connectors and is output (balanced/unbalanced) on two, 3.5 mm captive screw connectors. In addition to the listed video formats, the ISM 482 can also accept HDTV. The other difference between the two models is in the scaled output rates each supports. The ISM 182 can output 15 different rates up to 1024 x 768. The ISM 482 supports 33 different output rates, up to 1365 x 1024 and including 480p, 720p, 1080p, and 1080i.

To enable superior scaling performance, the ISM Series features several of Extron's patent-pending technologies. Dynamic Motion Interpolation (DMI™) technology, 3:2 and 2:2 pulldown detection, and Accu-RATE Frame Lock (AFL™). DMI is an advanced motion detection and compensation method that enables image enhancement with no loss of image fidelity. 3:2 and 2:2 pulldown detection help maximize image detail and sharpness for NTSC or PAL sources that originated from film. AFL solves frame rate conversion issues experienced by video scalers. When video input and output refresh rates differ, there are certain points in time when the two rates cross over each other. The result is a glitch or image freeze on the display. AFL solves this problem by locking the output frame rate to the input frame rate.

Housed in a rack-mountable, 3U-high metal enclosure, the ISM Series includes RS-232 capability. The unique advantage of RS-232 control is the Extron Simple Instruction Set (SIS™). These instructions are simple to use, easy to read, ASCII command codes. Both the ISM 182 and the ISM 482 come standard with the QuickSwitch Front Panel Controller (QS-FPC™) which allows for touch-of-a-button input and output selection directly from the front panel.

Description (Cont.)

Another feature is browser-based control via TCP/IP, the primary supported protocol (communications method) on the Internet. Existing network architecture can be used to create a flexible, scalable control solution. In addition, you can send RS-232 commands using Extron's Simple Instruction Set (SIS™) through custom-made HTML pages created with off-the-shelf software programs.

Features

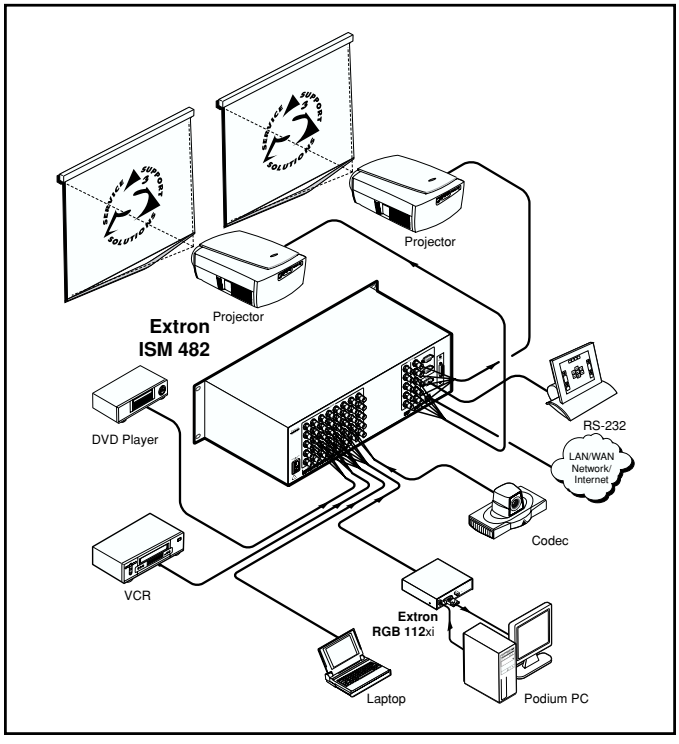
- **Inputs –** The ISM Series accepts eight, fully configurable inputs on female BNCs. The ISM 182 accepts RGBHV, RGBS, RGsB, component, S-video, and/or composite video. The ISM 482 accepts those same formats, plus HDTV.
- **Outputs –** Two individually scaled signal outputs are available on both BNCs and 15-pin HD connectors simultaneously. A black screen image is also available for output.
- **Scaled output resolutions –** The ISM 182 offers 15, user-selectable computer-video output rates up to 1024 x 768. The ISM 482 provides 33, user-selectable computer-video output rates, up to 1365 x 1024 and including 480p, 720p, 1080p, and 1080i.
- **3:2 and 2:2 pulldown detection –** 3:2 pulldown detection for NTSC and 2:2 film detection for PAL is an advanced film mode processing technique. It helps maximize image detail and sharpness for NTSC or PAL sources that originated from film. When such materials are detected, this technology applies video processing algorithms that optimize the conversion of film-based video—resulting in richly detailed images with sharply defined lines (patent pending).
- **Dynamic Motion Interpolation (DMI™) –** DMI technology is an advanced motion detection and compensation method used to deliver the best aspects of still and motion algorithms. This process results in a superior level of image enhancement capability with no loss of image fidelity.
- **Accu-RATE Frame Lock (AFL™) –** A technology exclusive to Extron that solves frame rate conversion

FEATURES (Cont.)

issues experienced by video scalers. When video input and output refresh rates differ, there are certain points in time when the two rates cross over each other. The result is a glitch or image freeze on the display. AFL solves this problem by locking the output frame rate to the input frame rate (patent pending).

- **Triple-Action Switching™ (RGB delay) –** RGB delay blanks the screen when the matrix switcher switches to a new source. This ensures no noise during input switches.
- **Five test patterns –** The ISM Series matrix switchers/scalers can output five different test patterns: crop, cross hatch, grey scale, color bars, and alternating pixels. A blue-only mode is also included for proper setup of the video decoder.
- **QuickSwitch Front Panel Controller (QS-FPC™) –** The QuickSwitch FPC allows for touch-of-a-button input and output selection. Extron's QuickSwitch technology reduces the learning curve usually associated with switching the inputs and outputs of a matrix switcher by using a tactile front panel button for every input and output.
- **Picture controls –** Brightness, contrast, color, tint, horizontal and vertical sizing, horizontal and vertical centering, four user-selectable levels of horizontal detail, and eight user-selectable levels of vertical detail provided.
- **16 auto-memories per input.**
- **Front panel input label windows –** Input buttons may easily be labeled by any Brother P-Touch labeler or by Extron's label software, which ships with every Extron matrix switcher. Each input can be labeled with names, alphanumeric characters, or color bitmaps for easy input/output selection.
- **RS-232 control –** A rear panel, RS-232 control port provides connection of the ISM Series to a third party control system.
- **Simple Instruction Set (SIS™) –** Extron's SIS™ is a set of basic ASCII code commands that provide simple control through a third-party control system. Instead of programming in long, obscure strings of code, SIS makes it easy to operate an Extron product using RS-232 control.
- **Control software –** For RS-232 remote control from a PC, Extron ships our Windows®-based control software with every matrix switcher. This icon-driven software uses a graphical drag-and-drop interface to make I/O configuration and other customization functions simple and convenient. The software also offers an emulation mode for configuration of an offsite matrix switcher; the I/O configuration may then be saved for future downloading to the matrix switcher.
- **Balanced & unbalanced audio –** Accepts both balanced and unbalanced audio signals. Gain and attenuation adjustments can be made directly from the front panel, input by input.
- **Audio breakaway –** Provides the capability to break away an audio signal from its corresponding video signal. Audio breakaway switching can be accomplished via front panel control or RS-232 remote.
- **Executive mode –** Locks out all front panel functions except basic switching and control commands; all other functions, however, remain active through RS-232 control.
- **Internal power supply –** The 100-240VAC, 50/60 Hz, auto-switchable internal power supply of the ISM Series provides worldwide power compatibility.
- **Ethernet Control –** Supports browser-based control of common operations via TCP/IP, the primary communications method on the Internet, by utilizing existing network architecture.

APPLICATION DIAGRAM



SPECIFICATIONS

Video

Routing ..... 8 x 2 matrix

Video input

Number/signal type ..... 8 RGBHV, RGBS, RGsB, component video, S-video, composite video

Connectors ..... 8 x 5 female BNC

Minimum/maximum levels ..... Analog— 0V to 1.0V p-p with no offset

Impedance ..... 75 ohms

Horizontal frequency ..... Autoscan 15 kHz to 100 kHz

Vertical frequency ..... Autoscan 50 Hz to 100 Hz

Resolution range ..... Autoscan 720 x 525 to 1600 x 1200

Video processing

Decoder ..... 9 bit digital

Digital sampling ..... 24 bit, 8 bits per color; 13.5 MHz standard (video), 140 MHz standard (RGB)

Colors ..... 16.78 million

Horizontal filtering ..... 4 levels

Vertical filtering ..... 8 levels

Video output

Number/signal type ..... 2 RGBHV, RGBS

Connectors ..... 2 x 5 BNC female, 2 15-pin HD female

Minimum/maximum levels ..... 0V to 0.7V p-p

Impedance ..... 75 ohms

Scaled resolution

ISM 182 ..... 640x480[1,3,4,5], 800x600[1,3,4,5], 832x624[3,4,5], 848x480[3], 852x480[3], 1024x768[1,3,4,5]

ISM 482 ..... 640x480[1,3,4,5], 800x600[1,3,4,5], 832x624[3,4,5], 848x480[3], 852x480[3], 1024x768[1,3,4,5], 1280x768[2], 1280x1024[1,3,5], 1360x765[3], 1365x1024[3,5], 480p[3,5], 720p[3,5], 1080p[3,5], 1080i[3,5]

[1] = at 50 Hz [2] = at 56 Hz [3] = at 60 Hz
[4] = at 75 Hz [5] = locked to the current input's vertical refresh rate

Return loss ..... -30dB @ 5 MHz

DC offset ..... ±5mV maximum with input at 0 offset

Sync

Input type ..... Autodetect RGBHV, RGBS, RGsB

Output type ..... RGBHV, RGBS

Standards ..... NTSC 3.58, NTSC 4.43, PAL, SECAM

Input level ..... 0V to 5.0V p-p

Output level ..... 0V to 5.0V p-p

Input impedance ..... 510 ohms

Output impedance ..... 75 ohms

Max input voltage ..... 5.0V p-p

Max. propagation delay ..... 20 nS

Polarity ..... Positive or negative (selectable)

Audio

Routing ..... 8 x 2 stereo matrix

Gain ..... Unbalanced 0dB, balanced +6dB

Frequency response ..... 20 Hz to 20 kHz, ±0.05dB

THD + Noise ..... 0.03% @ 1 kHz at rated maximum output drive

S/N ..... >90dB at rated maximum output drive

Crosstalk ..... <-80dB @ 1 kHz,fully loaded

Stereo channel separation ..... >90dB @ 1 kHz

CMRR ..... >75dB @ 20 Hz to 20 kHz

Audio input

Number/signal type ..... 8 stereo, balanced/unbalanced

Connectors ..... 8 3.5 mm captive screw connectors, 5 pole

Impedance ..... >10 kohms unbalanced/balanced, DC coupled

Maximum level ..... +19.5dBu, (balanced or unbalanced) at stated %THD+N

Input gain adjustment ..... –15dB to +9dB, adjustable per input

Audio output

Number/signal type ..... 2 stereo, balanced/unbalanced

Connectors ..... 2 3.5 mm captive screw connectors, 5 pole

Impedance ..... 50 ohms unbalanced, 100 ohms balanced

Gain error ..... ±0.1dB channel to channel

Maximum level (Hi-Z) ..... >+21dBu, balanced or unbalanced at stated %THD+N

Maximum level (600 ohm) ..... >+15dBm, balanced or unbalanced at stated %THD+N

NOTE: 0dBu = 0.775 volts (RMS).

Control/remote — switcher/scaler

Serial control port ..... RS-232, 9-pin female D connector

Baud rate and protocol ..... 9600, 8-bit, 1 stop bit, no parity

Serial control pin configurations ..... 2 = TX, 3 = RX, 5 = GND

Ethernet control port ..... 1 RJ-45 female connector

Ethernet data rate ..... 10/100Base-T, half/full duplex with autodetect

Ethernet protocol ..... ARP, ICMP (ping), TCP/IP, Telnet

Program control ..... Extron's control program for Windows®
Extron's Simple Instruction Set™ – SIS™
Microsoft Explorer, Netscape Navigator, Telnet

General

Power ..... 100VAC to 240VAC, 50/60 Hz, 60 watts, internal, auto-switchable

Temperature/humidity ..... Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing
Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing

Rack mount ..... Yes

Enclosure type ..... Metal

Enclosure dimensions ..... 5.25" H x 17.5" W x 11.2" D (3U high, full rack width) 13.3 cm H x 48.3 cm W x 28.4 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)

Product weight ..... 11.2 lbs (5.1 kg)

Shipping weight ..... 17 lbs (7.7 kg)

DIM weight ..... TBD

Vibration ..... ISTA/NSTA 1A in carton (International Safe Transit Association)

Listings ..... UL, CUL

Compliances ..... CE, FCC Class B

MTBF ..... 30,000 hours

Warranty ..... 2 years parts and labor

Part Numbers

ISM 182 60-424-01

ISM 482 60-425-01

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